

Translation

PATENT COOPERATION TREATY

PCT/EP2003/009706



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference 2002P16038WO | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/EP2003/009706 | International filing date (day/month/year) 01 September 2003 (01.09.2003) | Priority date (day/month/year) 27 September 2002 (27.09.2002) |
| International Patent Classification (IPC) or national classification and IPC H04Q 7/38 | | |
| Applicant SIEMENS AKTIENGESELLSCHAFT | | |

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| 1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36. |
| 2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of <u>3</u> sheets. |
| 3. This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application |

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| Date of submission of the demand 20 April 2004 (20.04.2004) | Date of completion of this report 23 December 2004 (23.12.2004) |
| Name and mailing address of the IPEA/EP | Authorized officer |
| Facsimile No. | Telephone No. |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/009706

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages _____ 1-16 _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages _____ 1-9 _____, filed with the letter of _____ 14 October 2004 (14.10.2004)
- ☒ the drawings:
 pages _____ 1/6-6/6 _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP 03/09706

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|-----|-----|
| Novelty (N) | Claims | 1-9 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | 1-9 | YES |
| | Claims | | NO |
| Industrial applicability (IA) | Claims | 1-9 | YES |
| | Claims | | NO |

2. Citations and explanations

Reference is made to the following documents:

D1: US 6 195 342 B1

D2: US 2002/077103 A1

D3: US 6 212 382 B1.

A. Documents and observations:

1. The invention relates to a method for the operation of a mobile radio system and to a corresponding device according to the features of the preamble of independent claims 1 and 9, respectively.
2. Document D1 discloses a similar method and a similar device for the operation of a mobile radio system with at least one first radio cell and a plurality of radio cells adjacent thereto, each of said adjacent radio cells being served by one base station; according to D1, a sub-group of the adjacent radio cells is determined according to the position of a mobile station within the first radio cell and the mobile station then measures a quality parameter of signals of the base stations of

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only this group of adjacent radio cells; the radio cells are not locally overlaid.

A method of this type can be used, in particular, for measurements related to mobile station "handover".

Document D2 discloses a similar method, wherein a mobile station receives a neighbour cell list optimised for the position of said mobile station and measures only the signals of the base stations of the cells included in this list. In D2, likewise, the cells are not locally overlaid.

In addition, document D3 describes a handover method in a mobile communications system with macrocells that are locally overlaid with microcells. If, for example, a mobile station is to be prevented from switching from a macrocell to a microcell, the network provides said mobile station with a neighbour cell list containing only macrocells.

3. Proceeding from the closest prior art, as disclosed in document D1, the present invention addresses the problem, with regard to locally overlaid radio cells, of reducing the measurement outlay for the mobile station prior to handover.
4. This problem is solved by means of a method for the operation of a mobile radio system and a corresponding device according to the characterising features of independent claims 1 and 9, respectively.

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The **essence** of the **invention** is that, proceeding from the **method** defined in the preamble of **claim 1** (see document D1), in the mobile radio system **two** groups of, in each case, mutually adjacent radio cells are **locally overlaid**, the **first** radio cell belonging to the first group, and the **sub-group** of its adjacent radio cells belonging to the second group; in the first radio cell, the mobile station **measures** a signal quality parameter for the base stations of at least one part of the immediately adjacent radio cells of the **first** group and it is ascertained for **which** of these adjacent radio cells of the **first** group the **best** measurement results are obtained for the **current position** of the mobile station; the **sub-group** of the radio cells of the **second** group is **determined using** the radio cells of the first group with the best measurement results and the mobile station measures the signal quality parameter for the base stations of only the sub-group of the adjacent radio cells of the second group.

The **device** for determining a sub-group of adjacent radio cells according to the features of **claim 9** comprises all the above features of the invention relating to said device.

5. The invention offers the **advantage** that, even in the event of locally overlapping radio cells, the measurement outlay for the mobile station prior to a handover is reduced.

6. EP-A-0 986 279, also cited in the international search report, does not disclose or render obvious

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the subject matter of the present invention since said document discloses only prior art that, in relation to the present invention, is general knowledge in the field of mobile station handover in mobile communications systems with overlapping microcells and macrocells and associated methods for generating neighbour cell lists.

7. The subject matter of **independent claims 1 and 9** is therefore considered to be **novel and inventive** (PCT Article 33(2) and (3)).
8. **Claims 2 to 8** are dependent on claim 1 and, thus, likewise satisfy the requirements of PCT Article 33(2) and (3) in respect of **novelty and inventive step**.
9. The present invention is clearly also **industrially applicable** (PCT Article 33(4)).

B. **Further observations relating to the present application:**

1. Pursuant to PCT Rule 5.1(a)(ii), the description should have cited documents D1 to D3, which documents contain prior art that is relevant to the present application, and briefly outlined said relevant prior art.
2. The introductory part of the description (including the statement of the problem) should have been brought into line with the new claims (PCT Rule 5.1(a)(iii)).